PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P00784-WO-01	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/US04/04937	International filing date *(day/month/year)* 18 February 2004 (18.02.2004)	Priority date *(day/month/year)* 18 February 2003 (18.02.2003)
International Patent Classification (IPC) or national classification and IPC IPC(7): B01F 13/08 and US Cl.: 366/273		
Applicant ARGONAUT TECHNOLOGIES, INC.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of ___ sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☐ *(sent to the applicant and to the International Bureau)* a total of ___ sheets, as follows:
      ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items:
   - ☒ Box No. I Basis of the report
   - ☐ Box No. II Priority
   - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - ☐ Box No. IV Lack of unity of invention
   - ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - ☐ Box No. VI Certain documents cited
   - ☐ Box No. VII Certain defects in the international application
   - ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand	Date of completion of this report
20 September 2004 (20.09.2004)	21 January 2005 (21.01.2005)
Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Charles E. Cooley Telephone No. (571) 272-1700

Form PCT/IPEA/409 (cover sheet)(January 2004)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US04/04937

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

☐ international search (under Rules 12.3 and 23.1(b))

☐ publication of the international application (under Rule 12.4)

☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☒ the international application as originally filed/furnished

☒ the description:
pages 1-16 as originally filed/furnished
pages* NONE received by this Authority on _____
pages* NONE received by this Authority on _____

☒ the claims:
pages 17-20 as originally filed/furnished
pages* NONE as amended (together with any statement) under Article 19
pages* NONE received by this Authority on _____
pages* NONE received by this Authority on _____

☒ the drawings:
pages 1-13 as originally filed/furnished
pages* NONE received by this Authority on _____
pages* NONE received by this Authority on _____

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/figs _____
☐ the sequence listing (*specify*): _____
☐ any table(s) related to the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/figs _____
☐ the sequence listing (*specify*): _____
☐ any table(s) related to the sequence listing (*specify*): _____

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims Please See Continuation Sheet	YES
	Claims Please See Continuation Sheet	NO
Inventive Step (IS)	Claims Please See Continuation Sheet	YES
	Claims Please See Continuation Sheet	NO
Industrial Applicability (IA)	Claims Please See Continuation Sheet	YES
	Claims Please See Continuation Sheet	NO

2. Citations and Explanations (Rule 70.7)
Please See Continuation Sheet

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

V.1. Reasoned Statements:
The opinion as to Novelty was positive (Yes)with respect to claims 2, 3, 10, 14, 24, 27, 30, 31, 34, 35, and 36
The opinion as to Novelty was negative (No) with respect to claims 1, 4-9, 11-13, 15-23, 25, 26, 28, 29, 32, and 33
The opinion as to Inventive Step was positive (Yes)with respect to claims 14, 27, 34
The opinion as to Inventive Step was negative(NO) with respect to claims 1-13, 15-26, 28-33, and 35-36
The opinion as to Industrial Applicability was positive (YES) with respect to claims 1-36
The opinion as to Industrial Applicability was negative(NO) with respect to claims NONE

Claims 1, 4-6, 11-13, 17-20, 25-26, 29 and 32-33 lack novelty under PCT Article 33(2) as being anticipated by SCHOB (EP 1188474 A1).

Per the English language equivalent US 6,733,171 B2 to SCHOB, EP 1188474 A1 discloses the recited apparatus and magnetic stirring method (Figures 19-20) including a reactor 3; rotatable (denoted at 2e) wheel 2g with opposed drive magnets 2d encompassing the reactor 3; a mixer 1 with magnets 1m within the reactor 3 driven by the rotating wheel 2g; the wheel 2g being adjustable along the axis of the reactor (denoted at 2h); axially movable lift 2b (denoted at 2h) attached to the wheel 2g.

Claims 1, 4-9, 15-23, and 28 lack novelty under PCT Article 33(2) as being anticipated by KAWAKAMI (JP 2-194826).

KAWAKAMI (JP 2-194826) discloses the recited apparatus and magnetic stirring method (Figures 1-2) including a reactor 1; rotatable wheel 12 with opposed drive magnets 10' encompassing the reactor 1; a mixer 9, 19 with magnets 10 within the reactor 1 driven by the rotating wheel 12; the wheel 12 being driven by a belt 16 which is driven by a pulley 15; the pulley 15 being driven by motor 14; and holder 13 and/or 13'.

Claims 1, 4-9 and 17-23 lack novelty under PCT Article 33(2) as being anticipated by MATSUNAGA (JP 1-207122).

MATSUNAGA (JP 1-207122) discloses the recited apparatus and magnetic stirring method (Figures 1-6) including a reactor 1; rotatable wheel 9 or 59 or 69A with opposed drive magnets 8A, 8B or 48A, 48B or 58A, 58B encompassing the reactor 1; a mixer 33A, 33B or 43, 53 with magnets 7A, 7B or 47A, 47B or 57A, 57B within the reactor 1 driven by the rotating wheel 9 or 59 or 69A; the wheel 9 or 59 or 69A being driven by a belt 27 which is driven by a pulley 25; the pulley 25 being driven by motor 29.

Claims 2, 3, 30, and 31 lack an inventive step under PCT Article 33(3) as being obvious over SCHOB (EP 1188474 A1).

Per the English language equivalent US 6,733,171 B2 to SCHOB, EP 1188474 A1 discloses the recited apparatus and magnetic stirring method (Figures 19-20) including a reactor 3; rotatable (denoted at 2e) wheel 2g with opposed drive magnets 2d encompassing the reactor 3; a mixer 1 with magnets 1m within the reactor 3 driven by the rotating wheel 2g; the wheel 2g being adjustable along the axis of the reactor (denoted at 2h); axially movable lift 2b (denoted at 2h) attached to the wheel 2g. To duplicate the elements shown in Figs. 19-20 such that a plurality of reactors and corresponding wheels are provided would not have involved an inventive step.

Claims 2 and 3 lack an inventive step under PCT Article 33(3) as being obvious over KAWAKAMI (JP 2-194826).

Supplemental Box

KAWAKAMI (JP 2-194826) discloses the recited apparatus and magnetic stirring method (Figures 1-2) including a reactor 1; rotatable wheel 12 with opposed drive magnets 10' encompassing the reactor 1; a mixer 9, 19 with magnets 10 within the reactor 1 driven by the rotating wheel 12; the wheel 12 being driven by a belt 16 which is driven by a pulley 15; the pulley 15 being driven by motor 14; and holder 13 and/or 13'. To duplicate the elements shown in Figs. 1-2 such that a plurality of reactors and corresponding wheels are provided would not have involved an inventive step.

Claims 2 and 3 lack an inventive step under PCT Article 33(3) as being obvious over by MATSUNAGA (JP 1-207122).

MATSUNAGA (JP 1-207122) discloses the recited apparatus and magnetic stirring method (Figures 1-6) including a reactor 1; rotatable wheel 9 or 59 or 69A with opposed drive magnets 8A, 8B or 48A, 48B or 58A, 58B encompassing the reactor 1; a mixer 33A, 33B or 43, 53 with magnets 7A, 7B or 47A, 47B or 57A, 57B within the reactor 1 driven by the rotating wheel 9 or 59 or 69A; the wheel 9 or 59 or 69A being driven by a belt 27 which is driven by a pulley 25; the pulley 25 being driven by motor 29. To duplicate the elements shown in Figs. 1-6 such that a plurality of reactors and corresponding wheels are provided would not have involved an inventive step.

Claims 7-10, 21-24, 35, and 36 lack an inventive step under PCT Article 33(3) as being obvious over SCHOB (EP 1188474 A1) in view of MULLER (US 4,697,929).

Per the English language equivalent US 6,733,171 B2 to SCHOB, EP 1188474 A1 discloses the recited apparatus and magnetic stirring method (Figures 19-20) including a reactor 3; rotatable (denoted at 2e) wheel 2g with opposed drive magnets 2d encompassing the reactor 3; a mixer 1 with magnets 1m within the reactor 3 driven by the rotating wheel 2g; the wheel 2g being adjustable along the axis of the reactor (denoted at 2h); axially movable lift 2b (denoted at 2h) attached to the wheel 2g. SCHOB (EP 1188474 A1) does not disclose the mechanism for imparting rotating motion to the wheel 2g, namely in the form of a motor driven pulley and belt or motor driven gear. MULLER discloses mechanisms 98 and 100 for driving wheels 52 and 72, respectively. The wheel 52 is driven by a worm gear 107 that is driven by a shaft and motor 11. The wheel 72 is driven by a belt 105 driven by a pulley 103 that is driven by a motor 11A. Since MULLER teaches that driven members such as wheels 52 and 72 can be driven by alternative driving mechanisms which either utilize a motor driven worm gear or a motor driven belt and pulley arrangement, to have provided the wheel of SCHOB (EP 1188474 A1) with a motor driven pulley and belt or motor driven gear for the purpose of driving the wheel into rotary motion would not have involved an inventive step.

Claims 10, 24, and 36 lack an inventive step under PCT Article 33(3) as being obvious over SCHOB (EP 1188474 A1) in view of ALLEGRI, SR. (US 4,372,394).

Per the English language equivalent US 6,733,171 B2 to SCHOB, EP 1188474 A1 discloses the recited apparatus and magnetic stirring method (Figures 19-20) including a reactor 3; rotatable (denoted at 2e) wheel 2g with opposed drive magnets 2d encompassing the reactor 3; a mixer 1 with magnets 1m within the reactor 3 driven by the rotating wheel 2g; the wheel 2g being adjustable along the axis of the reactor (denoted at 2h); axially movable lift 2b (denoted at 2h) attached to the wheel 2g. SCHOB (EP 1188474 A1) does not disclose the mechanism for imparting rotating motion to the wheel 2g, namely in the form of a motor driven gear. ALLEGRI, SR. discloses a mechanism 26 for driving a wheel 32 having driving magnets 29 thereon that magnetically couples and therefore drives a mixer/agitator 21 in the vessel 20. The wheel 32 is driven by a worm gear 34 that is driven by a shaft 31 and motor (col. 2, lines 30-34). Since ALLEGRI, SR. teaches that a driven member such as a wheel 32 having drive magnets 29 thereon can be driven by a driving mechanism that utilizes a motor driven worm gear, to have provided the wheel of SCHOB (EP 1188474 A1) with a motor driven gear for the purpose of driving the wheel into rotary motion would not have involved an inventive step.

Claims 7-9, 21-23, and 35 lack an inventive step under PCT Article 33(3) as being obvious over SCHOB (EP 1188474 A1) in view of KAWAKAMI (JP 2-194826) or MATSUNAGA (JP 1-207122).

Per the English language equivalent US 6,733,171 B2 to SCHOB, EP 1188474 A1 discloses the recited apparatus and magnetic stirring method (Figures 19-20) including a reactor 3; rotatable (denoted at 2e) wheel 2g with opposed drive magnets 2d encompassing the reactor 3; a mixer 1 with magnets 1m within the reactor 3 driven by the rotating wheel 2g; the wheel 2g being adjustable along the axis of the reactor (denoted at 2h); axially movable lift 2b (denoted at 2h) attached to the wheel 2g. SCHOB (EP 1188474 A1) does not disclose the mechanism for imparting rotating motion to the wheel 2g, namely in the form of a motor driven pulley and belt. KAWAKAMI (JP 2-194826) discloses the recited apparatus and magnetic stirring method (Figures 1-2) including a reactor 1; rotatable wheel 12 with opposed drive magnets 10' encompassing the reactor 1; a mixer 9, 19 with magnets 10 within the reactor 1 driven by the rotating wheel 12; the wheel 12 being driven by a belt 16 which is driven by a pulley 15; the pulley 15 being driven by motor 14; and holder 13 and/or 13'. MATSUNAGA (JP 1-207122) discloses the recited apparatus and magnetic stirring method (Figures 1-6) including a reactor 1; rotatable wheel 9 or 59 or 69A with opposed drive magnets 8A, 8B or 48A, 48B or 58A, 58B encompassing the reactor 1; a mixer 33A, 33B or 43, 53 with magnets 7A, 7B or 47A, 47B or 57A, 57B within the reactor 1 driven by the rotating wheel 9 or 59 or 69A; the wheel 9 or 59 or 69A being driven by a belt 27 which is driven by a pulley 25; the pulley 25 being driven by motor 29. Since KAWAKAMI (JP 2-194826) and MATSUNAGA (JP 1-207122) teach that a driven member such as a wheel having drive magnets thereon can be driven by a driving mechanism that utilizes a motor driven belt and pulley arrangement, to have provided the wheel of SCHOB (EP 1188474 A1) with a motor driven pulley and belt for the purpose of driving the wheel into rotary motion would not have

Supplemental Box

involved an inventive step.

Claims 14, 27, and 34 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest the lift being driven by a lift handle and gear mechanism or the wheels being supported by a mixer case.

Claims 1-36 meet the criteria set out in PCT Article 33(4), and thus possess industrial applicability because the subject matter claimed can be made or used in industry.